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(12) UK Patent Application (19) GB (11) 2 062 935 A

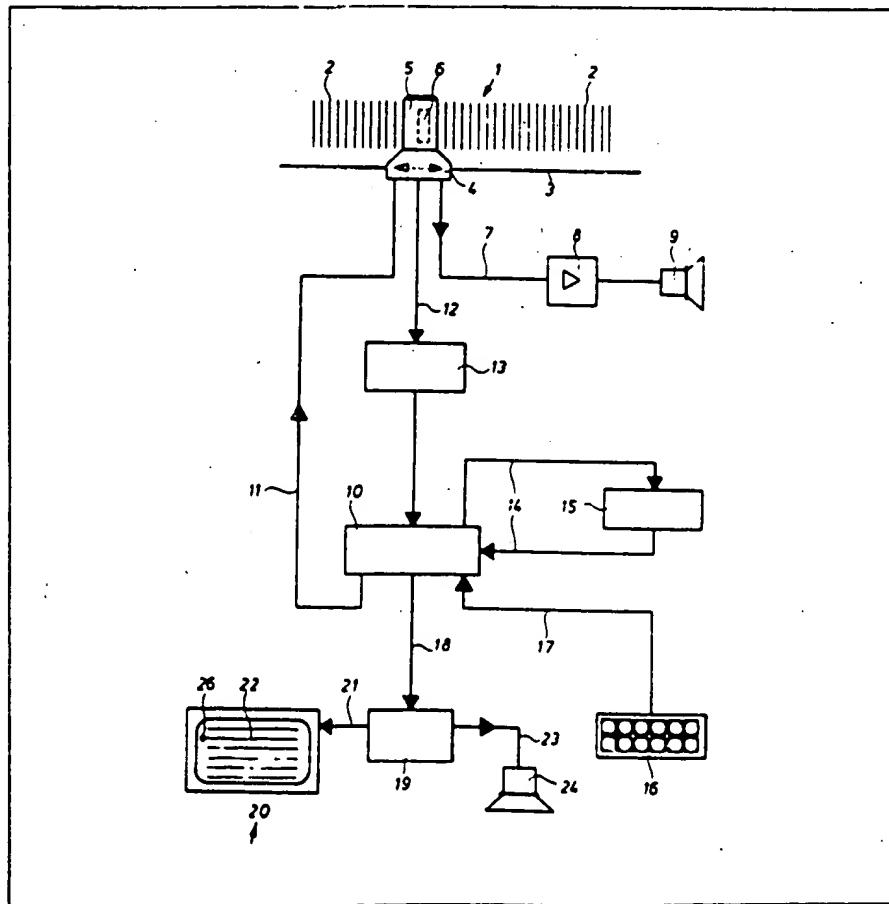
(21) Application No 8035105
 (22) Date of filing 31 Oct 1980
 (30) Priority data
 (31) 2944177
 (32) 2 Nov 1979
 (33) Fed. Rep of Germany (DE)
 (43) Application published
 28 May 1981
 (51) INT CL³
 G11B 11/22
 (52) Domestic classification
 G5R CC
 (56) Documents cited
 None
 (58) Field of search
 G5R
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(5, 7, 8, 9), a selector device (4), and a selector keyboard (16) connected to a microprocessor (10) having an associated memory (15), wherein each record (2) in the record magazine carries machine readable information which can be read by an information reader (6).

The machine readable information may be provided in an optically, acoustically or magnetically coded form, and includes information to enable identification of the record side, and having been read by the reader (6) is passed to the microprocessor (10) which can access further information as to the title, composer, artist, etc. which can be displayed on the display (20). Selection of a record side is made by means of the keyboard (16) and information of the selection is displayed on display (20).

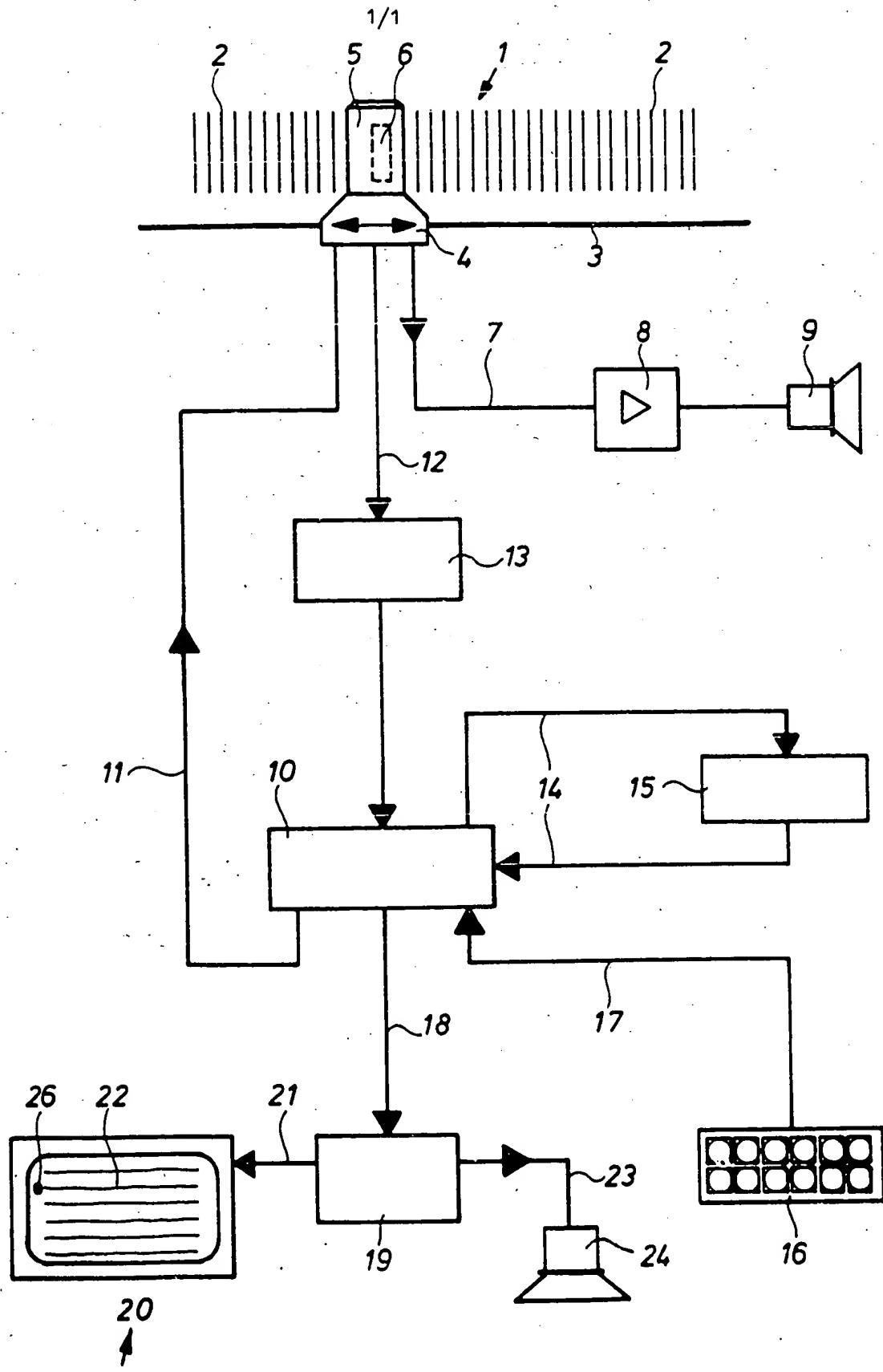
(54) Juke box

(57) An information system for a coin-free jukebox having a play-back device



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SPECIFICATION

Information system for all the functions of a jukebox

5 The invention relates to an information system for all the functions of a coin-operated jukebox, with a play-back device, a selector device, and a keyboard connected to a microprocessor for selection of the particular information desired, in which the microprocessor is associated with a non-volatile memory.

A control system for the selection and storage of the requested side of a record in a coin-operated jukebox including a store and credit operation in which a microprocessor, connected to a keyboard via input and output lines, is connected to a binary coded decimal 1 to 10 decoder, which is connected to output devices through a level converter, a binary coded decimal 7-segment decoder operating a 7-segment display, and a binary coded decimal 1 to 16 decoder connected to a coding table, a keyboard, a selection switch and a coin-operated switch is known from German Auslegeschrift 2,439,675. In order to avoid the loss of information in the case of a power cut, the microprocessor is designed as a random access write/read store which has the property of retaining its information content over a long period. The advantages of this control system are the easy programmability of the entire system, high flexibility, cost effective construction and the ability to convert rapidly from one jukebox to another.

However, in the case of this known jukebox, a conventional title list containing the address, the title and the performer of the individual piece of music must be provided in order that any required side of a record may be selected and its address stored using the selector keyboard, i.e. if for example the user wishes to hear all the pieces of music by a particular performer he must read laboriously through the entire title list. The title list is also used to display all the information of interest to the user about the pieces of music offered by the jukebox. The information offered cannot be an optimum because of the space taken up by the size of the title list. It cannot for example show which pieces of music are played most frequently. In addition to this, in the case of the known jukebox it is necessary to place the records in the compartments of the record magazine with their sides in a particular order in order to ensure correspondence between an address in the title list and the side of a record, and this is relatively onerous for the person setting up the machine. Failure to do this results in a record other than the selected record being played.

In addition to this it is already common practice to fit devices to jukeboxes which are known as 'popularity meters' and which are used to record the number of times any individual record from the jukebox's record magazine is played. This provides the operator of such a jukebox with accurate information regarding which of the alternatives made available to the public is most frequently requested, so that he is therefore in a position to replace unwanted records by others which are more popular and thus adapt the repertoire of any jukebox to the

tastes of those who use the jukebox in that particular place. This information only relates however to an individual record so that the operator is not informed directly whether for example popular music, dance

- 70 music or hit songs are least liked.
- Furthermore a process for the selection and extraction of individual records stored systematically in a jukebox, in which each individual record is coded, the coding for each record is requested and the record is removed by an extractor mechanism activated when the selected record is recognised, is known from German Offenlegungsschrift 2,731,606. In this case the records are coded by sticking on a label divided up according to a BCD code in light and dark zones. Each record thus bears a coded sticker which is associated with a particular selector button labelled with the title of the piece of music. The records can in fact be placed in the individual compartments of the record magazine in random order, but a corresponding button is required for playing each side of a record, which with the now usual 120 or 160 pieces of music on offer in a jukebox results in a disproportionately large keyboard.
- 90 The invention is founded on the need to create an information system for a jukebox of the type described in the introduction which by simple means provides both the user and operator of the machine with all information of interest and at the same time permits easier maintenance.

According to the present invention there is provided an information system for all the functions of a coin-free jukebox incorporating a playing device, a selector and a selector keyboard connected to a microprocessor for the selection of particular desired information, in which the microprocessor is associated with a non-volatile memory, wherein the sides of each record carry machine readable information which is passed via an information reader on the record selector, an intermediate circuit and a microprocessor to the memory and the memory is accessible by the microprocessor for reproduction of the information in sorted form via an intermediate component and an optical and/or acoustic output unit.

As a development of the invention the information relating to each record side is preferably contained in an optical store in the form of a sticker divided according to a BCD code into light and dark zones attached to the side of the record. In an alternative embodiment the information relating to each side of a record may be stored in a special groove on the record which is located at the outside edge and is modulated at a higher frequency. In another alternative embodiment the information relating to each side of a record may be contained in a magnetic trace impressed into the record which can be scanned by a corresponding reader head.

In a further embodiment of the invention the output unit preferably consists of a cathode ray tube screen and/or a loudspeaker. As appropriate, when several titles of records are displayed on the screen arranged by title, performer, orchestra, type of music: popular music, dance music or the like as instructed by the selector keyboard, a light spot can

be caused to move from title to title by pressing a particular button on the keyboard and the title opposite the light spot can be selected by pressing another particular button on the keyboard. As an alternative both buttons in the keyboard may be incorporated in a button acting as a sequence button to select a particular side of a record. There is furthermore the possibility that particular operating information may be displayed on the screen for the operator of the jukebox on pressing particular buttons on the keyboard. In addition to this an invitation to play the jukebox or instructions for its use may be displayed on the screen.

The essential advantage deriving from the invention is that both the user and the operator of the jukebox have the facility of calling up all information of interest to them and that pieces of music can be selected on selective principles, i.e. on the basis of sortable data such as e.g. the title, performer, composer, lyricist or orchestra for a piece of music, or classifications such as e.g. popular music, dance music, marching music. The person responsible for servicing need no longer have the trouble of sorting the records in the record magazine according to a particular system and no longer has the tedious task of rearranging and replacing the title strips for the pieces of music in the title list, since in accordance with the invention once the records have been changed in the magazine and once a particular button on the selector keyboard has been pressed all the information is read off from the individual sides of the records by the information reader and, after appropriate processing, sorted by the microprocessor and input to the non-volatile member, usefully comprising a magnetic bubble memory, so that the information can be displayed at all times by the output unit.

The present invention will be described further, by way of example, with reference to the accompanying drawing, which shows a block diagram of a jukebox incorporating an information system in accordance with an embodiment of the invention.

Within a record magazine 1 containing a plurality of records 2, which carry machine readable information on each side, a guide rod 3 carries a selector 4, incorporating a playing device 5 and an information reader 6, which moves back and forth. Pieces of music are played by means of the playing device 5 which is connected, by means of a lead 7 incorporating an amplifier 8, to a loudspeaker 9. The selector device 4 receives control signals from a microprocessor 10 via a lead 11. The coded information or data for the individual pieces of music carried on the sides of the records 2 passes through the information reader 6, the lead 12 and an intermediate circuit 13, which processes the data so that it is acceptable to the microprocessor 10, which inputs the data via lead 14 into a magnetic bubble memory 15. Instructions for the reproduction of particular information are received by the microprocessor 10 from the selector keyboard 16 via a lead 17. These instructions are passed by the microprocessor 10 in association with the magnetic bubble memory 15 via a lead 18 to an intermediate device 19 in which the resulting data is intermediately stored and proce-

sed in order that it may be reproduced by means of an optical and/or acoustic output device 20. For this purpose the intermediate device 19 is connected on the one hand via a lead 21 to a cathode ray tube

70 display 22 and on the other hand via a lead 23 to a loudspeaker 24. When the information on several record titles is displayed on the screen 22, a particular title may be selected by means of a selector button keyboard 16 associated with a light

75 spot 26 which moves from title to title.

CLAIMS

1. An information system for all the functions of
- 80 a coin-free jukebox incorporating a playing device, a selector and a selector keyboard connected to a microprocessor for the selection of particular desired information, in which the microprocessor is associated with a non-volatile memory, wherein the sides of each record carry machine readable information which is passed via an information reader on the record selector, an intermediate circuit and a microprocessor to the memory and the memory is accessible by the microprocessor for reproduction of
- 85 90 the information in sorted form via an intermediate component and an optical and/or acoustic output unit.
2. An information system according to Claim 1, in which the information relating to each side of a record is contained in an optical store in the form of a label, divided into light and dark zones according to a BCD code, which is affixed to the side of a record.
3. An information system according to Claim 1,
- 100 in which the information relating to each side of a record is stored in a groove on the record which is modulated at a higher frequency and which lies on the outside edge of the record.
4. An information system according to Claim 1,
- 105 in which the information relating to each side of a record is contained in a trace of magnetisable material pressed into the side of a record which can be read off by a corresponding reading head.
5. An information system according to any of
- 110 Claims 1 to 4, in which the non-volatile memory is a magnetic bubble memory.
6. An information system according to any of
- 115 Claims 1 to 5, in which the output unit comprises a cathode ray tube screen and/or a loudspeaker.
7. An information system according to Claim 6,
- 120 in which when the information on several record titles is displayed on the screen arranged by title, performer, orchestra, type of music: popular music, dance music or the like as instructed by the selector keyboard, a light spot is caused to move from title to title by pressing a particular button on the keyboard and the title opposite the light spot can be selected by pressing another particular button on the keyboard.
8. An information system according to any of
- 125 Claims 1 to 7, in which the two buttons on the selector keyboard are incorporated into one button acting as a sequence button to select a particular side of a record.
9. An information system according to Claim 7,

in which an invitation to play records is displayed on the screen.

10. An information system according to Claim 7, in which particular operating information can be displayed on the screen for the operator of the jukebox by pressing particular buttons on the selector keyboard.

11. An information system according to Claim 7, in which the operating instructions for the jukebox 10 appear on the screen when it is not in use.

12. An information system for all functions of a jukebox, substantially as herein described with reference to and as illustrated in the accompanying drawing.

Printed for Her Majesty's Stationery Office by Croydon Printing Company Limited, Croydon, Surrey, 1981.
Published by The Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from which copies may be obtained.